DELL EMC XTREMIO X2: NEXT-GENERATION ALL-FLASH ARRAY

ESSENTIALS
Performance and Efficiency
- Predictable and consistent high performance with low sub-millisecond latency
- 4 to 20 times data reduction using inline deduplication and compression, XtremIO Virtual Copies, and thin provisioning
- Consumer simplicity with enterprise capabilities
- Ease of use—nothing to configure or tune

Applications
- Exceed the toughest SLAs for virtualized workloads
- Enable near real-time copies of production datasets
- Provide self-service operations for infrastructure and application teams

Business
- Enables unique copy data management capabilities to unlock business agility through improved workflows
- Reduces costs by one third and provides smaller, incremental scaling options
- Provides two times longer storage product lifecycles than traditional arrays
- Investment protection via Dell EMC’s Future-Proof Storage Loyalty Program

Realizing New Levels of Efficiency, Performance, and TCO
Dell EMC XtremIO is a market-leading purpose-built all-flash array that offers consistently high performance with low latency; unmatched storage efficiency with inline, all-the-time data services; rich application integrated copy services; and unprecedented management simplicity.

The next-generation platform, XtremIO X2, builds upon unique features of XtremIO to provide even more agility and simplicity for your data center and business. Content-aware, in-memory metadata and inline, all-the-time data services have made XtremIO the ultimate platform for virtual server and desktop environments and workloads that benefit from efficient copy data management.

XtremIO X2 includes many enhancements and new features. Highlights include:
- Enhanced Integrated Copy Data Management (iCDM)
- Multi-dimensional scaling
- Elegant software driven performance improvements
- Dramatically lower TCO with efficiency guarantees

Dell EMC XtremIO X2: Differentiated Architecture
X2 hardware and XIOS 6.1 innovative software greatly improve performance including up to 80 percent faster response times and support for up to 40 percent more concurrent users for VDI than the previous generation. The architecture offers two times faster VMware storage operations with a single X2 X-Brick offering up to 40 GB/s bandwidth.

X2 includes inline, all-the-time data services: thin provisioning, deduplication, compression, D@RE, XtremIO virtual copies (XVC), and double SSD failure protection with zero performance impact. Only XtremIO’s unique in-memory metadata architecture can accomplish this feat.

Dell EMC XtremIO X2
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Volumes are always thin-provisioned. XtremIO’s in-memory deduplication is global—across the entire XtremIO cluster irrespective of the number of X-Bricks in a cluster. This means that XtremIO only writes unique data—data that the entire cluster didn’t see in its I/O history—to the SSDs. This inline deduplication not only saves significant capacity but can also improve performance. Inline compression also adds to XtremIO’s data reduction efficiencies.

**XtremIO Virtual Copies** helps provision and deploy space-efficient, instant virtual data copies without impacting system performance. Compared to legacy arrays, X2 enables average savings of 4 to 20 times of the amount of physical capacity needed thanks to all of these data reduction methods.

XtremIO has developed a flash-based data protection algorithm that offers better than RAID 1 performance with better than RAID 5 capacity savings and protection comparable to RAID 6. It provides dual parity with as little as 10 percent capacity overhead. In addition, all of the inline, always-on data services are included with the platform at no additional charge.

X2 provides consistent performance for all block sizes and all read/write mixes throughout the lifecycle of the array. And iCDM capabilities enable you to create, refresh, and restore thousands of production copies, and run workloads on them, without performance impact or any storage overhead—accelerating business agility.

**Integrated Copy Data Management**

XtremIO pioneered the concept of iCDM—the ability to consolidate both primary data and its associated copies on a scalable all-flash array for unprecedented agility and efficiency. iCDM offers application integration, orchestration, and self-service for all copies. With XVC, you can provision copies that are immediately usable by the application, enabling fast deployments and ensuring those deployed copies are fully functional.

X2 now delivers up to two times as many XVC per cluster. This enables you to take XVC more frequently and retain them for longer periods of time than the previous generation. This is important for organizations that are using iCDM for data protection because it will allow them to set even shorter RPOs and retain more restoration point-in-times.
XtremIO exposes its agile and efficient copy services to application teams via Dell EMC AppSync software. AppSync provides application integration and orchestration services for XVC. It simplifies and automates the process of creating and consuming XVC for iCDM use cases. AppSync also provides local and remote recovery using XVC and replication technologies. Its deep application integration enables application owners or DBAs to satisfy copy demand for operational recovery and data repurposing. An AppSync iCDM Starter Bundle is included with every XtremIO purchase.

Organizations have received tremendous value from XtremIO iCDM and are aggressively using space efficient and high performance XtremIO Virtual Copies to empower their internal stakeholders such as application development and analytics teams. Today more than 55 percent of XVC in the existing XtremIO customer base are writable copies and used for active repurposing, not just static, data protection copies.

**Multi-Dimensional Scalability with Lower TCO**

The hardware building block for XtremIO is X-Brick. Each X-Brick in fact consists of two active-active controller nodes, with no single point of failure, packaged together. The X-Bricks are built entirely on enterprise-grade hardware components. The new multi-dimensional scalability of X2 enables you to scale up by adding as few as six SSDs at a time to a single X2 X-Brick. You can also scale out with additional X-Bricks in any increments—odd or even—and with partially populated X-Bricks.

XtremIO X2 has the ability to scale out while also allowing customers to scale up the capacity for their workloads.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>X-Brick Minimum Raw</th>
<th>X-Brick Maximum Raw</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2-S</td>
<td>7.2 TB</td>
<td>28.8 TB</td>
</tr>
<tr>
<td>X2-T</td>
<td>34.5 TB</td>
<td>69.1 TB</td>
</tr>
<tr>
<td>X2-R</td>
<td>34.5 TB</td>
<td>138.2 TB</td>
</tr>
</tbody>
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X2 is enhanced with newer Intel CPUs and expanded memory to optimize performance and enable consistent sub-millisecond latency. XtremIO X2 X-Bricks are available in three models: X2-S, X2-T and X2-R.
Software-Driven Performance and Efficiency Improvements

Hardware improvements alone can only take a platform so far. With the release of X2, Dell EMC introduced XIOS 6.0 software, which enhanced data reduction algorithms to improve data reduction by 25 percent on average.

XIOS software incorporates specific optimizations to greatly improve performance across the board but especially boosts small block IO performance. X2 combined with XIOS dramatically improves application performance for up to 80 percent better response time and 40 percent more concurrent users for VDI. There are also a number of enhancements to user experience that simplify administration.

XtremIO has always provided simple, easy-to-use management. XIOS delivers an HTML5 user interface for consumer-grade simplicity with enterprise-class features. The improved user interface includes:

- Contextual, automated workflow suggestions for management activities
- Advanced reporting and analytics that make it easy to troubleshoot
- Global search to quickly find that proverbial needle in the haystack

XIOS 6.1 provides a powerful HTML5 user interface

The simple, yet powerful user interface drives efficiency by enabling storage administrators to spend less time on storage provisioning and performance tuning and more time on strategic IT initiatives.

Delivering Efficiency and Simplicity at Scale

XtremIO combines efficiency and simplicity for deployment and administration of not only the array but also for all workloads that reside on it. Architectural planning sessions for applications are drastically simplified with XtremIO’s consistent and predictable response times in a scalable deployment that can grow to meet the future needs of your business.

The XtremIO platform is truly unique in its ability to transform your virtual infrastructure and application lifecycle strategies. With unmatched data efficiencies and rich application integration XtremIO X2 provides no compromise copy services and consistent performance.

Increase your agility and efficiency without increasing your physical capacity requirements through the use of XtremIO Virtual Copies and Integrated Copy Data Management. Revolutionize your approach to Dev/Test and all of your data repurposing needs with XtremIO X2.
XtremIO Replication - The Industry’s Most Efficient Replication

XtremIO’s content-aware metadata-centric model helps to streamline data operations efficiently with minimal movement of data. Introduced in XIOS 6.1 X2 replication is unique in the industry in that any non-unique block/data that doesn’t exist on the remote will be sent only once. And blocks that already exist on the target site will never be transferred. In fact, XtremIO X2 replication requires up to 38% less storage for fan-in topologies.

XtremIO native asynchronous replication is extremely reliable and able to deliver RPO’s of 30 seconds. This enables you to protect your businesses most important assets – data. It delivers extremely fast recovery options with hundreds of points in time as the recovery source. Retention policies are easily setup for minutes, hours and days leveraging the XMS management GUI Wizard.

Replication uses always-on inline data reduction services, including compression and deduplication minimizing WAN usage. This significantly reduces WAN bandwidth usage by 75% or greater, enabling IT departments to utilize WAN bandwidth for other IT applications. Additionally, this unique capability of X2 replication allows replication of heavy workloads without compromising RPOs. At no point is there a need to disable replication or any other data service in order to allow another data service run.

The Dell EMC Future-Proof Storage Loyalty Program

XtremIO X2 is included in Dell EMC’s Future-Proof Storage Loyalty Program which is designed to provide our customers with investment protection and with a set of world class technology capabilities to provide value for the entire lifetime of your applications. The Future-Proof Storage Loyalty program is different because it is available to our customers at no additional cost either in terms of higher maintenance price or higher product price. The program includes a 3 year satisfaction guarantee, hardware investment protection, clear price maintenance, all-inclusive software and a 4:1 storage efficiency guarantee. Designed to ensure Dell EMC customers feel confident in their Dell EMC storage purchasing decision. See program full details at www.dellemc.com/future-proof.

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1 Based on Dell EMC internal testing, Feb. 2018 w/10 hours continuous replication run & retention policy of 4 in 4 min.
2 Based on Dell EMC internal analysis, Feb. 2018, with XtremIO Replication for fan-in 4:1 central DR site topology
3 Based on Dell EMC internal analysis, Feb. 2018. Assumes 4:1 data reduction
4 Based on Dell EMC internal analysis, Feb. 2018